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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/077,084 | 02/15/2002 | Yan Hui | TI-33510 | 3476 |
| 23494 | 7590 | 11/30/2005 | EXAMINER | |
| TEXAS INSTRUMENTS INCORPORATED | | | HALIYUR, VENKATESH N | |
| P O BOX 655474, M/S 3999 | | | ART UNIT | PAPER NUMBER |
| DALLAS, TX 75265 | | | 2664 | |

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/077,084

Applicant(s)

HUI ET AL.

Examiner

Venkatesh Haliyur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-14 is/are rejected.
- 7) ☒ Claim(s) 9, 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>1 page</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 14 have been examined.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8,11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weerackody et al. [US Pat: 5,689,439] in view of Weerackody et al. [US Pat: 6,157,612].

Regarding claim 1,12,13, Weerackody et al. [US Pat: 5,689,439] disclosed in their invention of "Switched Antenna Diversity Transmission Method and System" that uses feedback information from ARQ/H-ARQ signal to control transmit diversity by switching to another antenna selected from a set of transmitting antennas {TA1...TAm} to retransmit the original packet if the receiver responds with a negative acknowledgement (NAK or NACK) instead of a positive acknowledgement (ACK), and both transmitter and receiver (first and second communication devices) works on a complimentary basis (pre-determined basis) while sending, receiving and retransmitting packets. [Fig 1A, column 1, lines 52-67, column 2&3, column 4 lines, 1-41].

Regarding claim 11, Weerackody et al. [US Pat: 5,689,439] disclosed communication device for communicating with a second communication device, the communication device comprising, a receiver for receiving an ARQ signal [item 91 of Fig 1A] from the second communication device, and a transmit diversity controller [92 of Fig 1A] having a transmit diversity configuration and in response to the ARQ signal determines if the transmit diversity configuration used to communicate with the second communication device needs to be adjusted [Figs 1A & 1B, column 3, lines 32-67, column 4, 1-41].

Regarding claims 2-4, Weerackody et al. [US Pat: 5,689,439] disclosed that the transmitting device (first communication device) includes a plurality of antennas (TA1...TAm) [item 67 of Fig 1A, column 3, lines 32-41], but fails to disclose using different basis (for step (c) of claim 1) by the first communication device causes the first communication device to select a different permutation of the plurality of antennas than the one used in step (a) of claim 1.

However, Weerackody et al. [US Pat: 6,157,612] in their invention of "Fast Fading Packet Diversity Transmission Method and System" disclosed that the transmitter uses M antennas with up to M sets of M fixed phase offsets, and uses first set of M fixed phase offsets for transmitting packets until a negative acknowledgement (NACK) is received from the receiver at which time the transmitter uses the second set of M fixed phase offset (different basis) [column 2, lines 1-39, column 4, lines 13-67].

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the teachings of Weerackody et al. [US Pat: 6,157,612]

to include the method of using different basis of selecting a different permutation of plurality of antennas for packet retransmissions in the system of Weerackody et al. [US Pat: 5,689,439] for transmitter (first communication device) to retransmit packets using different basis and the receiver to receive retransmitted packets with complementary basis.

Regarding claim 5, Weerackody et al. [US Pat: 5,689,439] disclosed that the first and second communication devices adaptively (suitably) changes the basis using a pre-determined order or using a selection algorithm known to both devices for each retransmission of a packet [column 3, lines 56-67].

Regarding claim 6-8,14, Weerackody et al. [US Pat: 5,689,439] disclosed the transmitter (first communication device) uses plurality of antennas (M), but fails to disclose the antenna basis is selected from a set of $M \times M$ permutation matrices derived from an identity matrix, index of new basis and order.

However, Weerackody et al. [US Pat: 6,157,612] disclosed in their system M sets of transmission antennas with M fixed phase offsets ($M \times M$) [column 3, lines 19-67, column 4, table] with the index and order of new basis.

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the teachings of Weerackody et al. [US Pat: 6,157,612] to include the method of using $M \times M$ sets of antennas for packet transmissions in the system of Weerackody et al. [US Pat: 5,689,439] for selecting the antenna basis from a set of $M \times M$ permutation matrices derived from an identity matrix with the index and

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order of new basis is known to both the transmitter and receiver (first and second communication devices).

Allowable Subject Matter

3. Claims 9,10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art in reference here are Weerackody et al. [US Pat: 5,689,439] and Weerackody et al. [US Pat: 6,157,612].

4. Any inquiry concerning this communication or earlier communications should be directed to the attention to Venkatesh Haliyur whose phone number is 571-272-8616. The examiner can normally be reached on Monday-Friday from 9:00AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached @ (571)-272-3134. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (571)-272-2600 or fax to 571-273-8300.

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5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).


Ajit Patel
Primary Examiner